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FEBRUARY 4TH, 1862.

JOHN CRAWFURD, Esq., President, in the Chair.

The following presents were announced, and the thanks of the Society ordered to be returned to their respective donors:—

The Mensuration of the Human Skull, by J. A. Meigs, M.D. (presented by the Author).—The Ancient Lake Habitations of Switzerland, by J. Lubbock, F.R.S. (Ditto).—Antiquarian, Ethnological, and other Researches in New Grenada, etc., by W. Bollaert (Ditto).—The Expedition of Pedro de Ursua in Search of El Dorado, by W. Bollaert (Ditto).—The Unity of the Human Species, by A. De Quatrefages (Ditto).—The Athenæum (the Editor).—The Photographic Journal (Ditto).—The London Review (Ditto).—Journal of the Society of Arts (Ditto).—The Genesis of Earth and Man (the Editor, R. S. Poole, Esq.).

V.—*On Ethno-Climatology; or the Acclimatization of Man.*

By JAMES HUNT, Ph.D., F.S.A., F.R.S.L., Foreign Associate of the Anthropological Society of Paris, Foreign Honorary Secretary of the Ethnological Society of London, etc., etc.

ONE of the most important and practical duties of the ethnologist at the present day is the endeavour to discover the laws which regulate the health of man in his migrations over the world. The generally received opinions on this important subject are, however, vague and unsatisfactory.

From some cause, it is the popular belief that man stands entirely alone in the animal kingdom with regard to the influence exerted on him by external causes. We are told that man can thrive equally well in the burning heat of the tropics and icy regions at the poles.

I purpose, therefore, in this paper to examine how far the supposition of man's cosmopolitan power is warranted by an induction from the facts at present known to us. We can gain nothing in climatology from *à priori* arguments, as it is entirely an experimental science; and hitherto we have not been able to foretell with any certainty the exact effect which any climate would exert on an individual or a race. No one who reflects on the important bearings which the question of man's cosmopolitanism introduces will be inclined to doubt the gravity of the question, and its claims to the serious attention, not only of ethnologists, but of all who are interested in the great problem of man's future destiny. This question, then, has equal claims on the attention of the philosopher and the statesman. Our data may be at present insufficient to found an exact science of Ethno-Climatology, but I trust to be able to show that there exist the outlines of a great science, which bids fair to prevent that waste of human life which has hitherto characterized the reckless policy

of British colonization. Dr. Boudin, who is well known for his researches on this and kindred subjects, has recently called the attention of the Anthropological Society of Paris to the question, and laments the great inattention which public men have hitherto given to such an important and grave subject. He very justly observes* :—"The problem is certainly one of the most important in the science of ethnology ; for it governs the great questions of colonization, of recruiting men destined for distant expeditions, and of fixing the duration of the sojourn of foreign troops at certain stations, so as to render them effective in war. This question touches public health and social economy." Nor will it be necessary for me further to ask attention to the subject of acclimatization, when it is considered how largely the British nation is practically interested in having a correct and physiological system of colonization. I therefore bring this subject under consideration, with a desire of calling public attention to the powers of acclimatization possessed by the races of man in general, and by Europeans in particular. It is asserted that to man belongs the exclusive privilege of being the denizen of every region ; for with plants and animals such is not the case. This explanation has as often been accepted as satisfactorily showing that man enjoys privileges over the animal and vegetable kingdoms. That races of men are found in every climate is perfectly true ; but a slight examination into the differences and peculiarities of the races of men will show that this argument is not so forcible as at first sight it appears. Theorists have often indulged in boasting of the superiority of man over the animal kingdom in his migrations over the world ; but these writers have forgotten that it is civilization which greatly aids man to adapt himself (for a time) to every climate. We have heard much, too, of the acclimatization of animals ; but the amount of what has been really effected has been also greatly exaggerated.

No one will attempt to deny that, physically, mentally, and morally, there does exist a very considerable difference between the denizens of different parts of the earth ; and it is not proposed to inquire whether the various agents which constitute climate, and their collateral effects, are sufficient to produce the changes we find in physique, mind, and morals ; but, simply taking the various types of man as they now occur on the earth, we have to determine whether we are justified in assuming that man is a cosmopolitan animal, and whether the power of acclimatization be possessed equally by all the races of man known to us.

The conditions which prevent or retard the acclimatization of man are physical, mental, and moral. It is, however, impossible to discuss the effect of climate only on man ; because we find that

* *Mémoires de la Société d'Anthropologie de Paris*, tome premier, 1860, p. 93.

food is inseparably connected with climate, and that both are modified by the physical conformation of the districts inhabited. The exercise or neglect of mental culture must also be considered. It is therefore nearly impossible to decide to which class we must ascribe certain effects; but there can be little doubt that all these causes act in harmony, and are insensibly bound together. In speaking, therefore, of climate, I use the word in its fullest sense, and include the whole cosmic phenomena. Thus, the physical qualities of a country have an important connection with climate; and we must not simply consider the latitude and longitude of a given locality, but its elevation or depression, its soil, its atmospheric influences, and also the quantity of light, the nature of its water, the predominance of certain winds, the electrical state of the air, etc., atmospheric pressure, vegetation, and aliment, as all these are connected with the question of climate.

Now we find man scattered over the globe, and existing and flourishing under the most opposite circumstances. Indeed, there seems no part of the earth in which man could not, for a period at least, take up his dwelling. When Capt. Parry reached the 84° of north latitude, it was the ice, and not the climate, which prevented him from reaching the pole. Man may live where the temperature exceeds the heat of his blood, and also where mercury would freeze; so man may exist where the atmospheric pressure is only one-half of what it is at the level of the sea. Men have been found permanently residing 12,000 feet above that level.

There is a difference between the climate of the north and south hemispheres under apparently the same circumstances. Thus, the European cannot live for any length of time at a great elevation in the northern hemisphere. The highest inhabited place of Europe has generally been considered to be the *Casa Inglese*, a small building on the lava of *Ætna*, near the foot of the uppermost crater, 9,200 feet above the level of the sea. There is, however, a house in the Theodule Pass, between Wallis and Piedmont, at an elevation of 10,000 feet.* These buildings are, however, only inhabited during the summer months. In the southern hemisphere there are permanent inhabitants in regions from 10,500 feet to 12,000 feet above the level of the sea. Dr. Tschudi, who has himself resided in these regions, describes what is known as the "Puna sickness," which is what may be called a mountain-sickness, and very much resembles sea-sickness. The Peruvians live and thrive well at elevations of from seven to fifteen thousand feet above the level of the sea—heights said by some observers to be often destructive to the whites. This difference between the

* Perty, *Vorschule der Naturwissenschaften*, 1853.

north and south hemispheres is caused, perhaps, by the difference in attraction at the north pole. In the northern hemisphere the ascent of a high mountain causes a rush of blood to the head, and in the southern there is an attraction of blood to the feet; hence the cause of the sickness, felt on ascending a mountain in that hemisphere.

An examination of the human race shows us that every family presents different modifications, which are doubtless connected in some way with the nature of the cosmic influences by which they are surrounded. We know that some plants and animals are peculiar to certain regions, and that if transplanted to other climates they degenerate or die; such is the case with man. In every climate we find man organized in harmony with the climate; and if he is not in harmony, he will cease to exist. The general scale of power for enduring change is in certain respects in unison with the mental power of the race, and is also dependent on the purity of blood. Uncivilized and mixed races have the least power, and civilized pure races the greatest. Every race of man, however, has certain prescribed geographical salubrious limits from which it cannot with impunity be displaced. Such, at least, is the lesson I have drawn from existing data. It is civilization which chiefly enables the European to bear the extremes of climate. Indeed, a people must be civilized to some extent before they desire to visit distant regions. The Esquimaux, for instance, is perfectly happy in his own way, and has no desire to move to a warmer climate. His whole body and mind are suited for the locality; and were he moved to a warm climate, he would certainly perish. The whole organism of the Esquimaux is fitted solely for a cold climate; nor is such a supposition problematical and inexplicable by known physical laws. On the contrary, the physiological explanation of such a phenomenon is quite simple. Thus, the European going to the tropics becomes subject to dysentery, and the negro coming to Europe, to pulmonary complaints. Europeans who have recently arrived at the tropics are instantly known by their walk and general activity. This, however, soon subsides, the organic functions become disturbed, the pulse and circulation are more active, the respiration less so, while the muscular fibre loses its energy; the stomach also becomes very weak. The action of the skin becomes abnormal, while the heat acts on and excites the liver.

It is often stated that tropical climates stimulate the organs of generation, but this is contrary to experience. That there is a low state of morality, and that the inhabitants of these regions are essentially sensual, cannot be denied; just as the cold region is distinguished by the gluttony of its inhabitants, and temperate regions by increased activity of brain.

The geography of disease has a most important bearing on this subject. It is somewhat strange that man suffers more from epidemics than animals, and this is probably owing to his neglect of the laws of diet, which require to be adapted to every climate. Thus we find that the temperate zone, which ought to be by far the healthiest, has more diseases than either the hot or the cold zones. The cold zone has but a small number of diseases; and in the torrid zone the number is not large, although the diseases are generally very malignant. Attempts have been made to classify diseases into three categories,—those of hot, cold, and temperate regions. Such a classification is, however, arbitrary and most unsatisfactory; for the same climate may be found in each of the three regions. In the tropics there are temperate and cold regions, just as there is equatorial heat in the temperate zone. Dr. Fuchs* distinguishes these three regions of disease. The first he calls the Catarrhal region. This is so denominated, because catarrh of the respiratory organs predominates in it. “Catarrh”, he says, “is the common cause of disease in the north temperate zone, between 1,300 and 3,000 feet above the level of the sea; in the central temperate zone, between 2,000 and 7,000; within the tropics, between 7,000 and 14,000 feet; in the cold zone, near the level of the sea”. The other two regions he calls the Entero-mesenteric region, in which gastric complaints predominate; and the Dysenteric region, in which there is no scrofula or tubercular disease. Without entering into the value of this classification, medical statistics seem to prove that there are three zones:—1st, the cold or catarrhal zone; 2nd, the tropical or dysenteric zone; and 3rd, the temperate or gastric and scrofulous zone. This last zone, however, seems to be subject to the diseases of the other two zones, which prevail respectively according to the seasons. The scrofulous zone ceases at an altitude of 2,000 feet above the level of the sea; here there is no pulmonary consumption, scrofula, cancer, or typhus fever.

It has been suggested that the perfection of the races in the temperate zone depends on the conflict to which they are subjected by the irruption of diseases from the other zones; the unfavourable climatic conditions producing a human organism capable of resisting them. Dr. Russdorf† says, “The climatic conditions of the temperate zone act in the formation of blood in such a manner that a large quantity of albumen is present in it. This richness in albumen is manifestly requisite to produce and nourish the powerful brain which distinguishes the Caucasian

* *Medicinische Geographie.* By Dr. C. Fuchs, 1853.

† *Vorträge zur Förderung der Gesundheitslehre* (The Influence of European Climate). By Dr. C. von Russdorf. Berlin: 1854.

race; for the brain mainly consists of albumen combined with phosphorated fatty matter". "It is the brain of the Caucasian which determines his superiority over the other races; it is the standard of the power of the organism; it might be termed the architect of the body, as its influence upon the formation of matter is paramount. The effect of the atmosphere upon the formative activity of the organism and upon the metamorphosis of matter is so great, that it is, for instance, on the influence of the oxygen absorbed by the skin and the lungs that the metamorphosis of the albumen into muscle, etc., directly depends. The atmosphere of the temperate zone favours such a change of matter that the blood remains rich in albumen, so that a large brain can be nourished. But this richness in albumen is also the cause of many characteristic diseases, when this substance is under the process of inflammation morbidly excited in the tissue of the organs, and destroys their anatomical structure or organic mechanism. That general condition, in which the consumption of the albumen by the organic metamorphosis is deficient, is well known as the scrofulous predisposition of the European, which is unknown among the inhabitants of the tropics and the cold zone."

Two questions, then, await a solution: 1st. Can any race of men flourish, unchanged both mentally and physically, in a different ethnic centre from that to which it belongs?

2nd. Can any race of man move from its own ethnic centre into another, and become changed into the type of that race which inhabits the region to which it migrates?

Now, races of men moving from one region to another must either degenerate and become extinct, or flourish with the same distinctive characters that they have in their own regions, or they must gradually become changed into new types of men suited to their new positions.

That new races of men are being formed at this time is highly probable, as where, for instance, we have in a particular region a class of men with the same temperament and character. This may, as in the case of America, give rise to a new race, but still belonging to the European type, just as we have in this country the distinctive class of the Quakers, etc. But this change in the so-called Anglo-Saxon race could have been effected without removing them out of their own region. If these men had congregated together in Europe, we should have had a group of men with different feelings and opinions from our own. The congregation of a number of men and women of similar character would always tend to increase or intensify the special characteristics of the descendants of such people. Some writers, in their anxiety to prove that climate has nothing to do with the varieties of man, deny that there is any change in the European inhabitants of

America; but recent researches give strong evidence that there is a change in mind, morals, and physique; and while this change is not to be entirely ascribed to the climate, there still is good presumptive evidence that the Europeans have changed in America, especially in North America. In the children of the colonists there is a general languor, great excitability, and a want of cool energy. As they grow up, they neglect all manly sports. This general excitability and want of coolness and continuous energy is seen in the whole Yankee race. The women become decrepid very early, and consequently cease to breed while still young. It is also affirmed that the second and third generations of European colonists have small families. Some fifteen years ago Dr. Knox stated publicly that he believed the Anglo-Saxons would die out in America if the supply of new blood from Europe was cut off. Such an assertion was, indeed, startling for any man to make; it seemed to bear on the face of it a palpable absurdity. But, as time has passed on, this statement certainly became less baseless, and is now, at least, an hypothesis as worthy of our attention as any other explanation of this difficult question. Emerson has recently remarked on this extraordinary statement of Dr. Knox, that there is more probability of its truth than is generally thought. Emerson* says, "Look at the unpalatable conclusions of Knox,—a rash and unsatisfactory writer,—but charged with pungent and unforgettable truths". He continues, "The German and Irish millions, like the negro, have a deal of guano in their destiny. They are ferried over the Atlantic, and carted over America to ditch and to drudge, to make corn cheap, and then to lie down prematurely to make a spot of green grass on the prairie".

I do not purpose to give any categorical answers to the queries suggested, but simply to bring forward some facts, and to give the opinions of some men who have paid attention to this and allied questions. Thus I trust to lay a basis for further investigation, and induce more labourers to enter the field for the purpose of developing this important question.

We must not take latitude simply as any test of climate; for the general climatological influences are very different in various regions. Thus it has been noticed that the west coast is colder than the east in the southern hemisphere; while, in the northern, the east is colder than the west.† In the French Antilles, the temperature is between 62° Fahr. to 77° Fahr., on the shore, and descends to 55° Fahr. or 60° Fahr. at eight hundred metres above

* *The Conduct of Life.* By R. W. Emerson, p. 10.

† See what Darwin says respecting the fig and grape ripening in South America much better on the east than on the west coast.

the level of the sea. At Fernando Po, the greatest heat known was from 83° to 100° Fahr.; generally it is about 73° Fahr. So French Guiana is said not to have a higher temperature than Algeria. Some parts of Australia and New Zealand are nearer the equator than Algiers, and yet the temperature and salubrity are very different. The effect of light is also most important, and is not merely confined to the skin, but affects the whole organism. The presence of light modifies the qualities of the air; it also acts on the nervous system. If we look at the analogy of the effect of the absence of light on organized beings generally, we shall readily understand the influence which it exerts on man. Europeans, indeed, who live in darkness, have colourless skin, the muscles soft, and the whole body bloated. It is, therefore, a question which yet has to be decided, how far the Esquimaux's ill-formed frame may be produced by the want of light. And here we find that insensibly our attention is called to the vexed question of the unity or plurality of origin of mankind; for it is on the assumption of unity of origin that the cosmopolitan powers of man have been imagined to exist. With that subject we have at present nothing to do, as it does not essentially affect our subject, which is based on actual facts, and not on theories.

When we see that plants and animals vary in different climates, we are led to expect that man will also vary with the climate. Plants growing like trees in the tropics, become dwarfed in cold climates. It would, indeed, be strange that, as all animals vary, man should remain unchanged. But, while admitting that man exists in harmony with external circumstances, we do not admit that one type of man can be changed into another. As the rose will under no change of external circumstances become a blackberry, so neither will a dog become a wolf, nor a European an African Negro. We shall, therefore, principally confine our attention to the inquiry whether man migrating from one region to another gradually degenerates. If there is degeneration going on, it is simply a question of time as to how soon the race will become extinct. I shall, therefore, contend that any race migrating from one centre to another does degenerate both mentally and physically. Indeed, the psychical change produced in man by climatological influence is as soon visible as the change produced on his physical frame. When, for instance, the European goes to Africa, he, for a short time, retains his vigour of mind; but soon he finds his energies exhausted, and becomes listless, and nearly as indifferent to surrounding events as the natives. There is, however, a considerable difference in the effects produced both on individuals of the same race, and on the different races of men. Some are affected immediately on their arrival, and then appear to become partially acclimatized; often

disease increases until it becomes very serious; again, others are attacked, without any warning, with either inflammation of the brain or liver. Others, again, do not appear at first to be at all affected; but gradually the strength gives way, the countenance becomes despondent, and chronic disease of the liver or stomach results.

Neither can the inhabitants of tropical regions generally withstand the influence of removal to a cold climate. Much, however, depends on race; for the different races of man have different degrees of adaptability for change of climate. We cannot, however, yet decide the exact powers of each race, as ethno-climatology is a new study, and a long series of observations is required before a satisfactory answer can be given.

Before I proceed to indicate the sort of evidence we can get from that most valuable of all modern sciences, statistical science, I think it will be well that I should quote some few authorities to show that there is an agreement between the most recent writers on this subject and the lesson we learn from statistics. Dr. A. S. Thomson, who has paid great attention to this subject, observes, "There is little doubt that the tropical parts of the world are not suited by nature for the settlement of natives of a temperate zone. European life is but with difficulty prolonged, much sickness is suffered, and their offspring become degenerate and cease to propagate their species in a few generations; and should necessity force Europeans to perform the drudgery of labouring in the field, their lives will be rendered still shorter, and their existence little better than a prolonged sickness." Dr. Thomson has entered into the various attempts of the Portuguese, Dutch, English, French, and Danes to colonize India. He has also dwelt on the attempts of the Dutch and Spaniards at colonization in the Indian Archipelago; and also on the state of European colonies in tropical Africa and tropical America. His conclusion is, "that man can only flourish in climates analogous to that under which his race exists, and that any great change is injurious to his increase and also to his mental and physical development."

Sir Alexander Tulloch well observes, that military returns, properly organized and digested, serve as the most useful guides "to point out the limits intended by nature for particular races, and in which alone they can thrive and increase"—boundaries which neither the pursuit of wealth nor the dreams of ambition should induce them to pass, and proclaim in forcible language that man, like the elements, is controlled by a power which hath said, "Hither shalt thou come, but no further."

Let us glance at the attempts of the French to colonize the north of Africa.

The mortality of the civil population in France is about twenty-five in a thousand; while the average mortality of the civil population in Algiers, in 1853, was 43·5, and in 1854, 53·2 in a thousand. In all the localities of Algiers, without "exception" says M. Boudin, "the mortality of the European population exceeds by far, not merely the normal mortality of England and France, but even that of the cholera years in these two countries." Notwithstanding these facts, the population is annually increasing by the influx of immigrants. As regards other colonies, the following table, quoted by M. Boudin from the official report of the Ministry of Algeria, published in 1859, speaks for itself:—

					Births.		Deaths.
Guadeloupe	-	-	-	-	20,095	...	20,675
Guiana	-	-	-	-	2,333	...	2,830
Réunion	-	-	-	-	18,934	...	20,775

This would be more satisfactory had the proportion of the women to men been also given.

But, before I proceed on this side of the question, I would call attention to the statement frequently made by the President of this Society. On one occasion, for instance, Mr. Crawford* said, "It has been confidently asserted that the British possessions in India are an unfit residence for the permanent dwelling of Englishmen, although within the same latitudes with the warm parts of America, and portions of it even more distant from the equator." "No less an authority," continues Mr. Crawford, "than the late Duke of Wellington gave it as his opinion that Europeans, especially in Lower Bengal, most of which is without the tropics, would die out in the third generation; but it is certain that this was an hypothesis of His Grace unsupported by facts." Mr. Crawford further contends that the Duke of Wellington's observation was made at an unfavourable time, and that at present the case is very different. Now all recent facts and observations prove that the Duke of Wellington was right. From numerous private inquiries of residents in India, I have obtained confirmation of this opinion. We have, moreover, the most extensive writers and observers on tropical diseases giving exactly similar opinions.

Sir Ranald Martin† says, "Of those Europeans who arrive on the banks of the Ganges, many fall early victims to the climate, as will be shewn hereafter. That others droop, and are forced ere many years to seek their native air, is also well known. That

* "On the Effects of Commixture, Locality, Climate," etc. Vol. i, Transactions of the Ethnological Society, new series, p. 89, 1861.

† Influence of Tropical Climates, etc., 2nd edit., by Sir J. R. Martin, p. 137, 1861.

the successors of all would gradually and assuredly degenerate if they remained in the country cannot be questioned ; for already we know *that the third generation of unmixed Europeans is nowhere to be found in Bengal.*"

William Twining also made the same assertion many years ago.

Another recent authority on India,* Mr. Julius Jeffreys, says, " Few children of pure English blood can be reared in the plains of India, and of that few the majority have constitutions which might cause them to envy the lot of those who die in their childhood. The mortality of barrack children is appalling, especially in the months of June, September, and October. At Cawnpore from twenty to thirty have died in one month. *In short, the soldiery leave no descendants of unmixed blood.*" Major-General Bagnold† has also said, that the oldest English regiment, the Bombay "Toughs", notwithstanding that marriages with British females are encouraged, have never been able, from the time of Charles II to this time, to raise boys enough to supply the drummers and fifers. Dr. Ewart‡ says, " Our race in process of time undergoes deterioration, physically and intellectually, with each succeeding generation, and ultimately ceases to multiply and replenish the earth." He also says, " that there is a certain deterioration of our race always under present circumstances tending to extinction in this country."

It remains, therefore, with Mr. Crawford and those who agree with him to accept these facts, or explain what has become of the descendants of the half million of people who have gone to India. It is generally supposed that there is a process of acclimatization going on with Europeans living in the tropics ; but the reverse is rather the case. It is true that the mortality is sometimes greater at first, but this is owing to the clearing out of the weakened and other defective constitutions which had been broken down by disease or intemperance. When this has taken place, there appears to be an improvement ; but after the first year there is a gradual decline in health, and sickness and mortality greatly increase. *We have exhaustion and degeneracy, but no real acclimatization.* Although Europeans suffer less on going to colder regions, still we observe the same fact in that case. Dr. Armstrong and others have observed that Europeans resist the cold of the polar regions better the first year than they do the second, and that every subsequent year they feel the effects of climate more.

* The British Army in India. By Julius Jeffreys, F.R.S. 1858, p. 172.

† Indigenous Races of the Earth. Article "Acclimatization". By Dr. Nott, p. 557.

‡ Digest of the Vital Statistics of Europeans in India. By Joseph Ewart, M.D. 1859.

This fact can be amply proved by statistics. As age increases, so does mortality in any place out of the native land of a people.

Dr. Farr gives the average per thousand of England and Wales, as—

Ages	20—24	25—29	30—34	35—39	40 and upwards.
Mortality	8·42	9·21	10·23	11·63	13·55

Now, if we compare this with a part of a valuable table prepared by Sir Alexander Tulloch,* we at once can estimate some of the deleterious effects of change to different climates on Europeans, from January 1, 1830, to March 31, 1837.

Stations.		18 to 25.	25 to 33.	33 to 40.	40 to 50.
Gibraltar	Mediterranean.....	18·7	23·6	29·5	34·4
Malta		13·	23·3	31·	56·7
Ionian Islands }		12·2	20·1	24·4	24·2
Mediterranean stations generally ...		15·5	22·2	28·1	33·
Bermudas.....	North America ...	16·	42·	42·	76·
Nova Scotia c. }		14·	22·5	30·8	41·5
Canada.....		19·7	27·8	37·8	35·
Windward and Leeward command .		50·	74·	97·	123·
Jamaica		70·	107·	131·	128·
Cape of Good Hope.....		9·	20·6	29·7	32·
Mauritius.....		20·8	37·5	52·7	86·6
Ceylon		24·	55·	86·4	126·6
Bombay		18·2	34·6	46·8	71·1
Madras		26·	59·3	70·7	86·5
Bengal		23·8	50·3	50·6	83·3

A modification of the same results is found from 1837 to 1847.

	Age. 20—25.	Age. 25—30.	Age. 30—35.	Age. 35—40.	Age. 40 and upw.
Mediterranean stations	16·3	15·1	16·4	23·4	34·4
Canada and Nova Scotia	13·1	17·7	19·2	20·3	35·6
Jamaica	60·	50·	73·	83·	97·

The following very useful table I have collated from the valuable Army Report for 1859. It would be very desirable if some tables were given to show the different periods that men had been located at each station.

Although this table is valuable, it must be borne in mind that it is only for one year. Troops are so continually changing stations, that we must only receive the suggestive evidence of such a table for what it is worth. It will be seen that there are no deaths in some stations at forty years of age and upwards; this

* Report of the Commissioners on the Re-organization of the Indian Army. 1859, p. 179.

is, however, simply because it frequently happens that there are no men in a regiment above that age.

Annual Ratio of Deaths per Thousand Living, at the following Ages, in 1859.

	Under 20.	20—24.	25—29.	30—34.	35—39.	40 and upwards.
Healthy districts in England } and Wales }	5·83	7·30	7·93	8·36	9·	9·86
England and Wales generally	7·41	8·42	9·21	10·23	11·63	13·55
Household Cavalry .....	...	3·38	6·85	9·05	16·13	15·04
Dragoon Guards and Dragoons	5·07	4·0	12·96	15·0	15·86	34·48
Foot Guards	7·92	7·34	7·80	12·07	26·47	9·71
Infantry Regiments	5·82	7·21	7·80	11·97	18·31	15·50
Depôt Battalions	6·31	20·13	12·39	20·11	37·97	44·78
Bermuda .....	...	10·0	5·35	24·15	48·08	...
Nova Scotia, etc.....	10·20	5·06	2·51	36·15	...	...
Newfoundland .....	...	...	...	...	13·51	...
Canada	8·85	8·94	11·54	4·42	15·27	10·38
Mediterranean generally	9·28	12·01	20·78	25·64	12·15	55·55
Cape of Good Hope .....	...	7·93	14·69	9·31	14·78	·60
Australian Colonies .....	...	1·94	6·91	7·06	26·59	23·81
Negro in W. Indies, W. and } L. command..... }	9·71	11·24	32·41	39·02	6·25	.
Ceylon Rifles	10·99	8·23	8·72	9·68	11·05	14·49

With officers and the civil servants in Bengal, we also find that the mortality greatly increases with length of residence, notwithstanding the great advantage which they have of being able to return to their native country. "Out of 1184 deaths among officers," says Sir Ranald Martin,* "the proportion occurring annually in each rank, and at each age, has been as follows :—

Percentage of Deaths.	Colonels, average age 61.	Lieut.-Colonels, average age 51.	Majors, average age 40.	Captains, average age 36.	Lieutenants, average age 18 to 33.	Cornets and En- signs, average age 18 to 33.	General average at all ages.
Died annually per thousand of each class	59·4	48·4	41·0	34·5	27·5	23·4	31·2

"The mortality among the civil servants, for a period of forty-six years, from 1790 to 1836, exhibits almost precisely the same results, viz. :—

* Loc. cit. p. 96.

Percentage of Deaths.	Above 50 years of age, and 30 of service.	Age 40 to 50, service 25 to 30.	Age 40 to 45, service 20 to 25.	Age 35 to 40, service 15 to 20.	Age 30 to 35, service 10 to 15.	Age 25 to 30, service 5 to 10.	Age 20 to 25, service 1 to 5.
Died annually per thousand of each class	48·6	36·4	35·4	23·4	16·6	20·8	19·9

“Between ten and fifteen years service is the period when leave of absence is allowed to those who choose to return to Europe for three years, which of course must have a material tendency in reducing the mortality of that class”.

The high mortality of our own army at home may also be greatly ascribed to the weakening influence of the climates of many of our foreign stations. The annual mortality per thousand, was—

	Age. 20—24.	Age. 25—29.	Age. 30—34.	Age. 35—39.	Age. 40 & upw.
Infantry. From 1837 to 1846	17·8	19·8	12·8	21·	23·4
In 1859	7·21	7·80	11·97	18·31	15·50
Depôt battalions, in 1857	10·13	12·39	20·11	37·97	44·78
England and Wales generally	8·42	9·21	10·23	11·63	13·55

In the useful army statistical report from which these facts are taken, this high mortality of the depôt battalions is acknowledged to be “attributable to the number of men serving in them whose constitutions have been impaired by foreign service, and many of whom have been sent home to the depôt labouring under chronic disease contracted abroad”.*

We can best estimate the deleterious influence of climate by comparing the relative mortality of native and foreign troops. Everywhere we see the same law. At Gibraltar, the deaths per thousand of the Malta Fencibles (although nearly all old men) was, in 1859, 8·19, while with the British troops it was 18·08 per thousand. On the west coast of Africa there are no white troops to compare with the black troops. The army report says, “The force consisted entirely of blacks, with the exception of four or five European sergeant-majors, of whom three died in the course of the year—two of fever at the Gambia, and a third of dysentery at Accra”.

The deaths of black troops at Sierra Leone, in a thousand, was 14·02; at the Gambia, 25·44; and on the Gold Coast, 25·06. The mortality of the white troops serving at Ceylon, from 1837 to 1846, was 41·74 per thousand; and in 1859 the mortality decreased to 35·06: while, with the so-called black troops, the

* Statistical, Sanitary, and Medical Report for 1859, p. 28.

deaths in a thousand, from 1837 to 1846, were 26·71; and in 1859, 10·19. The ratio of mortality with the Ceylon Rifles (Malays) is the same as that of the male population of this country. In the same report we find, under the head of China, what are called "native troops", which we discover to be Bengal Native Infantry, etc. The mortality of these troops from India is at the rate of 53·73 per thousand, without reckoning those who died subsequently from disease contracted in China; while, with the British troops serving in China, the mortality slightly exceeded that of the Indian troops, being 59·35 per thousand: no less than 42·58 of this number having died of miasmatic disease. Sir T. G. Logan, in his report on the Sanitary State of the Army, says, "The topographical character, however, of Hong Kong was acknowledged to preclude improvement to any considerable extent in the health of European troops, and its retention as the chief military station of the command could not be thought desirable in a sanitary point of view. The principal medical officer's report refers to the circumstance that the annual expenditure of men by death and invaliding had been averaged at 20 per cent., being more than double of what it is India; and that, notwithstanding every means had been taken, and no expense spared, to preserve the health of the troops, the results were still very unsatisfactory".

But the great mistake which most writers on the diseases of tropical countries commit is the neglect to ascribe the large amount of disease to the true source, viz., the inadaptability of Europeans to tropical countries. Nearly every medical writer on the diseases of India tries to prove that the large mortality is produced by some preventible cause; but a little inquiry into the diseases which attack the natives and Europeans will destroy this delusive hope. First, then, with a given strength of Europeans and natives we find that, with the three sorts of FEVERS, intermittent, remittent, and continued, there are in

Bengal	3·76	deaths of Europeans to 1 Native.
Bombay	2·54	" " 1 "
Madras	1·23	" " 1 "

The admissions for fever among Europeans were from

		Percentage of admissions to strength.	Deaths.
Bengal...	1812 to 1815	84·85	6·50
	1850 to 1854	100·25	100·06
Bombay	1811 to 1814	66·34	2·21
	1850 to 1854	63·10	0·78
Madras	1829 to 1832	29·52	1·21
	1848 to 1851	28·46	0·52

While with the native troops the following is the result:—

		Percentage of admis- sions to strength.	Percentage of deaths to admissions.
Bengal from	{ 1826 to 1838	..... 41·30	1·32
	{ 1839 to 1852	..... 53·16	0·96
Bombay	{ 1803 to 1828	..... 53·18	1·80
	{ 1828 to 1853	..... 46·55	1·18
Madras	{ 1827 to 1835	..... 21·27	1·46
	{ 1842 to 1852	..... 28·5	1·01

The large amount of deaths among the native soldiers may be greatly ascribed to the inadaptibility of our English pharmacopœia. Since our contact with the natives they are every year becoming more liable to all sorts of diseases, but especially fevers and bowel diseases. The high mortality amongst the natives must, therefore, be greatly ascribed to our inability to check disease in them. The deaths to the number of admissions are even greater amongst the natives than amongst Europeans. This, in itself, is pretty good evidence for the assertion that a healing art has yet to be discovered for their constitutions.

Then with DYSENTERY and DIARRHŒA, the proportion of deaths of Europeans to natives is in

Bengal	11·67	of Europeans to 1 Native.
Bombay	8·73	„ 1 „
Madras	6·53	„ 1 „

The contrast is sufficiently great with fevers and dysentery ; but it is still more marked with HEPATITIS :—

In Bengal,	60	to Europeans die of HEPATITIS to 1 Native.
Bombay, 44	„	„ 1 „
Madras, 30	„	„ 1 „

Even in those hot-beds of disease, the Indian jails, we find the inmates are far more free from hepatitis than our own troops in Bombay : the Europeans are attacked thirteen times oftener than the natives ; in Bengal, forty-three times ; and in Madras, our soldiers one hundred and seventy-eight times oftener.

Some writers have endeavoured to show that this disease is produced in Europeans by intemperance. But Dr. Morehead* says, “The evidence that intemperance in drinking exerts a particular influence in the production of hepatitis is by no means conclusive” ; and he also says, “The occurrence of hepatitis on the other hand, in its severest form, is not an unusual event in persons of temperate habits,—a statement which practitioners in India generally will, I am sure, amply confirm”.

With CHOLERA, the ratio of mortality is in

Bengal	6·	Europeans to 1 Native.
Bombay	2·6	„ 1 „
Madras	1·18	„ 1 „

There is also another fact which demands attention, viz, the in-

* Diseases of India. By C. Morehead. 2nd edit., 1861, p. 363.

crease of mortality in cases of persons attacked with this disease. Whatever may be the cause, there seems to have been far higher mortality in Bengal since 1838, and in Madras since 1842, than before. Thus, the relative mortality to the cases treated in Bengal has risen in each period of five years, from 1818 to 1853, from 26·71, 31·17, 21·80, 26·91, 55·53, 45·22. and 41·92 per cent.; and in Bombay, during the same time, from 18·53, 22·71, 30·58, 18·87, 37·33, 45·46, and 43·17; and in Madras, from 1829 to 1851, from 27·11, 27·63, 48, and 62·31.

There has been an increase of mortality of natives to cases treated, in Madras, of 7·26 per cent.; in Bengal, the mortality is about the same; and a decrease of three per cent. in Madras.

With phthisis (CONSUMPTION) the per centage of mortality to a given strength is

Bengal ...	11 deaths of Europeans to 1 Native.
Bombay ...	4 " 1 "

Thus, the deaths of Europeans, from phthisis, even exceed the native prisoners in our Indian jails.

In the various OTHER DISEASES which have not been mentioned, the mortality is far higher, being, in Bengal, as three Europeans to one native, and in Bombay, as 3·2 Europeans to one native.

Many writers have observed that, with the natives, those most free from disease are those who toil all day in the burning sun, with no covering at all on the head. Ignorance as to the difference of race has induced some commanders to attempt thus to *harden* the Europeans, with results something frightful to contemplate.

One of the regiments that had been the longest in India, the Madras Fusiliers, is stated to have been reduced in this way from eight hundred and fifty to one hundred and ninety fit for duty. Many similar cases have been produced by needless exposure. Mr. Jeffreys says, that Her Majesty's 44th Regiment in 1823 were nine hundred strong, and a very fine body of men. The commanding officer insisted that confinement of the men during the day was effeminate, and continued drilling them after the hot season had begun. But the men suffered the penalty of the officer's ignorance. "For some months," says Mr. Jeffreys,* "not less than one-third, and for some weeks one-half, of the men were in hospital at once, chiefly with fever, dysentery, and cholera. I remember to have seen, for some time, from five to ten bodies in the dead-room of a morning, many of them specimens of athletes." Experience has shown that it is not the absolute exposure to the sun from which Europeans suffer; it is the subsequent effects which are to be dreaded. On a march, the European will appear to be equal to the thick-skinned native; but afterwards he soon learns that such is not the case.

* The British Army in India. By Julius Jeffreys, F.R.S. 1858, p. 43.

The European soldier is also unfitted to stand the effects of a cold climate after some years residence in India, and dreads to return home to encounter the cold and hardships of English peasant-life. With officers, who can return to enjoy all the comforts and luxuries of civilization, the case is different. The few soldiers who remain in India have more or less chronic diseases, which, says Mr. Jeffreys, "would render the attainment of anything like longevity out of the question".

Seventy-seven per cent. of the European troops in Bengal are under thirty, twenty-three per cent. above that age; or ninety-four per cent. are under thirty-five, the remaining six above that age.

From Dr. Ewart* we learn that the European army has hitherto disappeared in Bengal in about ten and a half years; in Bombay, in thirteen and a half; in Madras, in seventeen and a half; or in all India, in about thirteen and a half years. We find the percentage of deaths to strength amongst European regiments, in Bengal, 6·94; in Bombay, 5·52; in Madras, 3·88.

Thus we find that, on adding all these diseases of European troops together, we get a mortality of at least seven per cent. for the whole of India, while with the native troops the mortality does not amount to a half per cent. Sir A. Tulloch says, that "The total loss from all causes has been at least seventy per thousand"; and that "the proportion invalided annually may be taken at about twenty-five per thousand more, and twenty-five per thousand to men not renewing their engagements"; making altogether twelve per cent., or one hundred and twenty per thousand. He further observes, that the number of recruits raised during peace, from 1845 to 1849 inclusive, was less than twelve thousand per annum; and that, with a force of eighty thousand men in India, we shall require nine thousand and six hundred of them for India, "unless", as he observes, "means can be adopted to reduce mortality and invaliding".

Mr. Jeffreys says the mortality of troops in India amounts to ten per cent. He observes, "The casualties amongst the troops have, *during peace*, amounted per annum to at least one thousand in every ten thousand; in England and her healthy colonies they have ranged from about ninety to a little above two hundred". Such being the undisputed fact, there is no doubt, as Sir A. Tulloch has observed, that "The selection of healthier stations for our troops than those they have hitherto occupied is no longer a matter of choice, but one of necessity, as we cannot hope to keep up the large European army required to hold India, without the

* A Digest of the Vital Statistics of the European and Native Armies in India. By Joseph Ewart, M.D., Bengal Medical Staff. 1859, p. 20.

strictest attention to this important measure". The late Sir H. Lawrence devoted much of his life to the solution of this question in a practical manner. There is no doubt that removing our military stations to the hills is a measure demanding serious attention. Sir Ranald Martin is of opinion that, in Bengal and the north-west provinces, the malaria might be escaped at an elevation of from two thousand five hundred to four thousand feet. That this would be advantageous is quite probable; but we shall not find in the hills the same climate we have in this country. We may escape the influence of malaria-diseases, just as we escape the yellow fever in the West Indies, at an elevation of from two to three thousand feet. The report for the re-organization of the Indian army gives the mortality from 1815 to 1855, exclusive of casualties, at a hundred thousand men, "the greater portion of whose lives", the report says, "might have been preserved had better localities been selected for the military occupation of that country". But are there any places even in the hills in which Europeans can be reared without gradually becoming degenerated? This is a serious question, to which science can as yet give no positive reply. Looking at the wisdom which is displayed in the general distribution of mankind, we shall be inclined to answer in the negative. It has been presumed that, because yellow fever is in a great measure escaped in Jamaica at an elevation of about two thousand five hundred feet, that this elevation would be sufficient to escape malarious diseases in other parts of the world; but such is not the case. If we ascend to any great height, we often get out of the region of malaria, and into the region of bowel-diseases. It is also affirmed* that "intermittent fever originates in some of the Himalayah stations. At Aboo, also, during the malarious months, ague is very prevalent. Dr. Cooke (Bombay service), in his annual report of the Khelat agency, states that 'Khelat, the highest inhabited spot of the Beloochistan table-land, standing seven thousand feet above the level of the sea, is also malarious'."

It has also been said by Sir John Lawrence, Brigadier-General Chamberlain, and Lieutenant-Colonel Edwards, that, besides our soldiers not liking to live in the hills, the natives have not the power of believing in what they cannot see; and they join in asserting that "there are sick men whom the hills make worse, and healthy men whom they make sick".† General Sir A. Tulloch also affirms‡ that the stations at an elevation of 8,000 or

* Diseases of India. By Dr. Moore, Bombay Medical Service, and in charge of the Sanitarium for European troops at Mount Aboo. 1861, p. 48.

† Papers connected with the Reorganization of the Indian Army. 1859, p. 6.

‡ Minutes of Evidence on the Reorganization of the Indian Army, p. 266.

9,000 feet "are less healthy than was expected, because the men suffered from what is called a hill-diarrhœa, which reduces them very much indeed". Many other authorities and facts tend to show that it is a great fallacy to assume that temperature and climate are at all the same thing. There may be the same ethnic climate, with vast difference of temperature. China, for instance, has very different temperatures; but this has hardly a perceptible effect on the race.

Dr. Ewart, like many other writers on this subject, has a theory which he believes would enable Europeans to be reared in India. He says, "The average standard of health of our race in this country would bear comparison with that of any race on the face of the civilized world, or of any people in Europe, provided the sources of malaria were dried up."

Although this is wholly a gratuitous assumption, we still have evidence to show that a very slight change is sufficient to make a considerable change in the health of soldiers. Mr. M'Clelland* says, "that out of a European force of little more than one thousand, there were four or six funerals daily; and this great mortality was checked by a change to the hills, which were only only one hundred or one hundred and fifty feet high. It is probably a mistake, however, to attribute this favourable change in the mortality to the climate; it was doubtless far more due to the influence on the brain and nervous system. If the cause which produces *ennui* amongst all classes of European residents in India could be eradicated, then perhaps the case might be different. A number of plans have been proposed to enable the European to live in India. In 1853-4, the expenditure for cinchona bark and quinine amounted to £11,686. It is now proposed to give quinine as a prophylactic for fevers, and there will be a demand for £46,744 worth.† But the process that is now seriously proposed by Desmartis,‡ in harmony with his theory of inoculation, is to transfuse a small quantity of blood taken from the natives into the veins of Europeans visiting such places as India, Brazil, or the West Coast of Africa! I would only beg to express a hope that in transfusing this blood they will not also transfer any of the mental or moral characteristics of these indigenous races into the European. If any process, however, can be devised to make Europeans like the natives, then we must remember that, instead of being able to hold down one hundred and fifty millions of people with about one hundred thousand men, we should want a very different number. It is only possible

* Medical Topography of Bengal, etc. 1859, p. 135.

† Ewart, p. 47.

‡ Quelques mots sur les Prophylaxies. Par S. P. Desmartis, Paris, 1859.

to hold India as long as Europeans remain the superior race. It has been asserted that, although they cannot bear the sudden change to a tropical climate, they can gradually become accustomed to the change. It seems a fair test of the influence of climate on race, to study its effects on the children of those who have become accustomed to the change, or, as it is sometimes falsely called, "acclimatized". Here there can be no question as to the effects of climate. We have seen what is the result of attempting to raise European children in India, and nearly the same result meets us elsewhere. Speaking of the effect of climatic influence on such children in Ceylon, Sir Emerson Tennant* observes, "If suitably clothed, and not injudiciously fed, children may remain in the island till eight or ten years of age, when anxiety begins to be excited by the attenuation of the frame and the apparent absence of strength in proportion to development. These symptoms, the result of relaxed tone and defective nutrition, are to be remedied by change of climate either to the more lofty ranges of the mountains or more providently to Europe."

Many writers, who contend that Europeans can become completely acclimatized, contradict themselves in their statements respecting the rearing of children. Mr. Robert Clarke, who has some eighteen years experience on the Gold Coast and at Sierra Leone, goes so far as to say,† "It is questionable whether persons of colour are better able to bear up against the influence of climate than persons of pure European blood, provided the latter are sober in their habits. There can be no doubt that Europeans, on their first arrival in West Africa, are in greater danger of losing their lives than the former; but when once they have become acclimatized, they seem generally to withstand the influence of the climate better than coloured people, provided, I repeat, they are temperate in their habits." If this be so, we should not expect to find great mortality amongst children born of "temperate, acclimated Europeans." But Mr. Clarke says,‡ "Great difficulty is experienced in rearing European children. They in general thrive admirably until teething begins. It is at this epoch they are frequently harassed with intermittent fever, which by repeated occurrence causes enlargement of the spleen and functional disturbance of the stomach and bowels, when they soon become cachectic, and unless removed to a more genial climate drop into an early grave."

Some authors think that the question of the European propagating himself in the tropics has been settled by the fact that, for

* Ceylon. By Sir James Emerson Tennant. 1860, p. 79.

† Reports of H.M. Colonial Possessions for 1858, Part II, p. 33.

‡ Topography and Diseases of the Gold Coast, 1861, p. 48.

three centuries, the Spanish race has lived and thrived in tropical America. Mr. Crawford says,* "The question whether the European race is capable of living and multiplying in a tropical or other hot region seems to have been settled in the affirmative on a large scale in America. Of the pure Spanish race there are at present probably not fewer than six millions, mostly within the tropics." But it is a wholly gratuitous assumption, unsupported by facts, to suppose that anything like this number of the Spanish race exists in America. If we were to read for Mr. Crawford's "millions" the word "thousands", we should perhaps be nearer the truth. In Mexico it is estimated that there are not more than ten thousand of the pure race,† reckoning both creoles and immigrants. What a small proportion is this to those who left their native land and have never returned again! For three hundred years Spain has poured out her richest blood on her American colonies, almost at the price of her own extinction, without the slightest prospect of being able to establish a Spanish race in Central America. Never was there a greater failure than the attempt of the Spaniards to colonize tropical America. Those who have watched the gradual change of the Spanish colonies must be convinced of the fallacy of quoting this as a case of successful colonization of tropical countries by Europeans. When the continual influx of new blood from Spain was taking place, the change was not so much observed; but now emigration has ceased the pure Spanish race is diminishing rapidly. All recent observations show that the Indian blood is again cropping out in a most remarkable manner. Instead of the Spaniards flourishing, there seems every prospect of their entire extinction, unless fresh blood is sent from Europe. The extinction of the Spanish race in America was likewise predicted more than twenty years ago by Dr. Knox. There is no doubt that this result has been greatly owing to the mixture of Spanish and Indian blood.

The laws regulating the mixture of human races do not directly concern the question of acclimatization; it has been found, however, that there is a different vitality between the offspring of the Spaniard and the Indian female, from that between the Englishman and the Indian woman. So also there is a different power of life between the offspring of the Portuguese and English with the negro woman. It can hardly be questioned that the Spanish race, like all other dark Europeans, are better suited for warm climates than the white Europeans. M. Boudin gives some

* Transactions of the Ethnological Society, vol. i, 2nd series. 1861, p. 88.

† It has since been asserted in the Cortes, by Don Pachero, that the pure Spanish race in Mexico does not amount to more than eight thousand. In 1793, Humboldt estimated the pure Spanish race in New Spain to consist of 1,200,000.

statistics to show that the Spaniards and Italians also suffered less in the great Russian campaign. Perhaps this may be explained by other causes.

On several occasions the Spaniards have attempted to colonize the beautiful island, Fernando Po, but have entirely failed. The last trial was made in 1859, when three hundred and fifty colonists were sent out, provided with every necessary; but at the beginning of 1861 they had nearly all died, the few remaining returning home entirely broken down in health.

On the change effected in Europeans by a residence in Ceylon, Sir J. Emerson Tennant observes,* "The pallid complexion peculiar to old residents is not alone ascribable to an organic change in the skin from its being the medium of perpetual exudation, but in part to a deficiency of red globules in the blood, and mainly to a reduced vigour in the whole muscular apparatus, including the action of the heart, which imperfectly compensates by increase of rapidity for diminution of power." This author very properly warns all habitual dyspeptics from a long sojourn at Ceylon. Gouty patients are, however, owing to the greater cutaneous excretion, entirely cured. We find that Europeans die mostly of cholera and inflammation of the liver, while negroes die of pulmonary consumption. Ceylon is hot for Europeans, and cold, especially in the forests, in comparison to the coast of Guinea.

Of the island of Cuba, Mr. Tylor has just written,† "The climate of the island is not unfavourable for a mixed negro and European race, while to the pure whites it is deadly. It is only by intermarriage with Europeans, and continual supplies of emigrants from Europe, that the white population is kept up."

In the reports of the colonies for 1858 and 1859, we only find the births and deaths of the different populations of one colony given. From these we learn that, at Antigua, in

1858	the births of white population were	50	deaths	75
1859	"	"	91	" 140
1858	" black	"	952	" 979
1859	"	"	1005	" 894
1858	" coloured	"	238	" 226
1859	"	"	250	" 205

Although this classification (of white, black, and coloured‡) is not very scientific, yet it would be of very great utility to get such simple returns from all our colonies, with the per-centage of women.

* Loc. cit. p. 78.

† Anahuac; or Mexico and the Mexicans. By Edward B. Tylor. 1861, p. 12.

‡ The coloured population are sometimes called brown. These terms are generally used to signify a mongrel breed of some sort.

Our experience of other races than the European is limited. Mr. Crawford contends that the Chinese become easily acclimatized in nearly all regions; and Pruner-Bey says, "that the Turanian is, in physical respects, the true cosmopolite."

I have already stated that latitude is no test of climate; so I would now state that, as neither heat nor cold is the cause of the physical differences of mankind, so neither is it mere heat or cold which affects man injuriously. That the Chinese have a large range of temperature is true, but they have not the great power of being acclimatized that many imagine. Fifty thousand Chinese have gone to Australia, and the same number to California, and perhaps about twenty or thirty thousand to Cuba, and six thousand to the Mauritius. This is a misfortune for both Australia and California; but there is hope for Cuba, as the Chinese are said not to be able to work there. Mr. Tylor says,* "Fortunately for them, they cannot bear the severe plantation-work. Some die after a few days of such labour and exposure, many more kill themselves; and the utter indifference with which they commit suicide, as soon as life seems not worth having, contributes to moderate the exactions of their masters. A friend of ours in Cuba had a Chinese servant who was impertinent one day, and his master turned him out of the room, dismissing him with a kick. The other servants woke their master early next morning with the intelligence that the Chinese had killed himself in the night to expiate the insult he had received."

We are at present quite unable to say whether the Chinese will ever become acclimatized in California or Australia. It is to be hoped, however, that they will not. The Chinese have taken no women with them to either place; but in Australia some of them are living with native women, and this may be the means of producing a hybrid race of Chinese-Australians. Whether this may stay the current of extinction which seems settling on the Australians, or whether it may aid in their destruction, are questions beyond the limits of this paper. Of the Indian immigrants to the Mauritius, we learn that the deaths exceeded the births by three hundred and eleven, but we are not told of the per-centage of women.

The mortality generally of the colony was—

In 1854	7	per cent.
1855	3·5	"
1856	5·0	"
1857	2·5	"
1858	2·7	"

* Loc. cit. p. 13.

In Trinidad, the total Indian population was, in 1859, thirteen thousand four hundred and forty-seven, and the deaths 2·7 per cent. ; but amongst the arrivals from Madras, the mortality was 7·7 per cent.

In 1859, the mortality of the Calcutta coolies was 2 per cent.

Of the Malays, all we know is, that the Dutch took some to the Cape, and the race still remains there, but whether pure or mixed we know very little ; we also are not informed if their numbers are increasing or decreasing. Of the Red Indians we only know that, on being removed from their native soil, they soon perish ; it is uncertain how much of this must be ascribed to the climate or how much to the inability of the race to alter their manners and customs.

The royal family of the Sandwich Islands, who visited England in 1827, all died, as did most of their attendants, of tubercular disease, after only three months visit.

So the Andaman Islander taken to Calcutta by Dr. Mouat was soon affected by the climate, and obliged to be sent back to his native land to save his life.

But perhaps the negroes offer the strongest proof of the fallacy of saying that all races of men are cosmopolitan. We have ample and positive evidence that they cannot perpetuate themselves beyond about the fortieth degree of north or south latitude. Indeed, in their own region the ascent of a high mountain will kill them, sometimes nearly instantly. Thus, out of the eight Africans who ascended with Beecroft the Saint Isabel Mountain,* at Fernando Po, no less than five died.

The negro seems to thrive in the southern states of America ;† but it is far from probable that he is suited to all tropical countries. Sir A. Tulloch and Dr. Bennett Dowler coincide in opinion that the negro will die out in the West Indies and the Mauritius. At Cuba, Mr. Tylor says, “there are fifteen thousand slaves imported annually ;” he also adds, “that the Creoles of the country are a poor degenerate race, and die out in the fourth generation.” The race is only kept up in Egypt and Algiers by constant immigration.

In the Mauritius, the deaths in five years exceeded the births by upwards of six thousand, in a population of sixty thousand.

Dr. Boudin says, “In Ceylon, in 1841, there was not a trace of the nine thousand negroes imported by the Dutch government before the English domination. Of the five thousand negroes imported by the English since 1803, there remained only, in

* The greatest height at which this mountain was ever estimated was that by Consul Hutchinson, who thought it was twelve thousand feet.

† Loc. cit. p. 12.

1841, about two hundred to three hundred, although females were imported to preserve them.”

Of the 4th West Indian Regiment placed, in 1819, in garrison at Gibraltar, nearly all perished of pulmonary disease in fifteen months.

The statistics of the mortality of negros in the different States have clearly shown the influence of climate. The farther they go north, the higher becomes the rate of mortality: they seem to die of consumption, just like the monkeys and lions in the Zoological Gardens.

It is difficult to determine the exact amount of influence exerted by race in resisting particular diseases. It has, however, been shown that the negro race, on the West Coast of Africa especially, is exempted from yellow fever, and that a very small portion of African blood is sufficient to resist the influence of this disease.

All the dark races seem less liable to yellow fever than the white man. Both the Red Indian and the Southern European are more exempt than the Englishman.

Mr. Clarke* says, that when the yellow fever broke out at Sierra Leone in 1837-8-9, 1847, and 1859, he never knew of a single negro or even of a man of mixed blood being attacked. He also says, that in 1837 and 1839 small-pox broke out among the negroes, and disappeared at the same times as the yellow fever appeared. With the plague the dark races are affected far more than the white, being the reverse of the law with the yellow fever. Dr. Nott contends that the predisposition to yellow fever is just in proportion to the lightness of the skin; and that with plague the reverse is the case.

The Jewish race, and not the Chinese race, are, however, nearest to being cosmopolitan. It is asserted that they live and thrive all over the world. If, however, we come to examine the evidence of this fact, we find that many of the people reputed to be Jews have no claim whatever to that questionable honour; such, for instance, as the many reputed cases of black Jews.

Dr. Boudin, although an advocate for the non-cosmopolitan powers of man generally, makes an exception in favour of the Jewish race, and says that this race has settled the question that one race is cosmopolitan.

The statistics which have been published respecting the Jews in different countries, seem to show that the Jew is subject to different physiological laws to those of the people by whom he may be surrounded. This phenomenon may, however, be explained by other physiological laws. M. Boudin supports his views from the difference in the statistics of disease and death of

* Remarks on the Topography and Diseases of the Gold Coast, p. 28. 1861.

the Jews and the other colonists in Algeria. But the conditions of these two are very different. The Jews have been in Algeria for a considerable time, while the colonists are going there daily. Had M. Boudin proved that a number of Jews and Frenchmen went to Algeria at the same time, and that the Jews became more easily acclimatized, it might go some way towards showing the advantage of the Jewish race over the Frenchman, if we could not explain the phenomenon on other grounds. Had M. Boudin proved satisfactorily that the Jew was cosmopolitan, we should not easily be induced to admit that this was inexplicable by physiological laws. I do not pretend to enter into any of the causes which may have enabled the Jew to appear favoured ; but we must not hurriedly admit that there are exceptional laws in favour of any one race. On the same plea that M. Boudin has claimed an exception in favour of the Jews, we may also advocate one on the part of the Gipsies. The chief cause, however, of the apparent superiority of the Jews over some other races is the fact that they are a pure race. All pure races support the influence of change better than mixed races. The nomadic Arabs, as long as they remain pure, can also live in very different temperatures and climates. The Chinese are also generally a pure race, and it is possible that the nearer the race approach the original type, the greater power they have in enduring change of climate. But enduring change of climate is not acclimatization. A process of acclimatization should enable a race to perpetuate itself in a new region, without supplies of new blood from its own region, and without, of course, mixing with the indigenous races of the invaded country. The historical records of migrations of nations do not give us sufficient evidence to make us believe in different laws from those which are in existence at this time.

I am fully sensible of the great difficulty there is at present of defining the exact limits of the various ethnic centres. When I speak, therefore, of the European centre, I would also observe that this region is not necessarily confined to the portion of the earth we call Europe ; on the contrary, I should include the whole of those original inhabitants of the Mediterranean, such as the Phœnicians, as belonging to the European centre. The modern Jews,* for instance, who are most probably lineal descendants of the old Phœnician merchants, are vastly superior to any purely Asiatic race. Never was the Jew more calumniated than by saying that he is an Asiatic ! We all know the distinctive characteristics of the various Asiatic races, and nowhere do we find a people at all resembling the Jews. The only explanation

* I do not include in this term the fair-haired, blue-eyed race found in the Levant, and who are called Jews by Mr. Layard and Dr. Beddoe.

I have ever heard given of this contradiction is that by Mr. Burke. That gentleman contends that there is a hierarchy not only in ethnic centres, but similarly in their climates; and that any race coming from an inferior centre to a higher centre is thereby improved, other conditions being equal, and provided of course that the change be not too violent. Thus he points out the fact that the Jew has not degenerated in Europe, but has greatly improved in spite of all disadvantages. He also very truly observes, that no one will contend that the climate of Palestine will suit an Englishman as that of England suits a Jew. We have, however, evidence to show that the climate of Palestine *does not* suit a Jew—a pretty good test that it is not his native land. Many writers have noticed this, but I will only quote the impartial evidence of Eliot Warburton, who says,* “It is a curious but well-ascertained fact that the Jews do not multiply at present in the native city of their race; few children attain to puberty, and the mortality altogether is so great, that the constant reinforcements from Europe scarcely maintain the average population.”

The great majority of the Jewish race is in Europe. The entire number of Jews, according to M. Boudin, is computed to be four millions three hundred thousand; and of these there are in Europe three millions six hundred thousand; in Africa four hundred and fifty thousand, in Asia two hundred thousand, and America forty-eight thousand, Australia two thousand. Thus more than three-fourths of the entire number of Jews are in Europe, and only a fraction of $\frac{2}{43}$ in Asia. Mr. Burke conceives it possible that even the Negro might be improved in the long run by coming to Europe under favourable circumstances, “though this,” says Mr. Burke, “would not apply to the lower and unprogressive portions of the type, but to its advancing sections.” Our researches have rather tended to show, however, that although they may not degenerate like Europeans going to an inferior centre, that they still are incapable of becoming acclimatized anywhere in Europe, and we much doubt if even out of Africa. We are unable in the present state of our science to do more than *see that ethnic centres do exist, without being able to define their exact limits or their number.*

In a former part of this paper I incidentally touched on the influence of the mind in conquering physical agents. Maltebrun, Goethe, and Kant, have all given their testimony in favour of the power of the mind in resisting disease. And this subject becomes important with reference to some statistical facts respecting the difference in mortality between the officers and men in India and

* The Crescent and the Cross, 1851, 8th edit., p. 334.

elsewhere. Thus with bowel-complaints in India, there were in Bengal only three more deaths of European officers in a ratio of ten thousand than in the same number of sepoy; and in Madras eighteen fewer deaths took place than in a similar number of sepoy.* Dr. Cameron also affirms that the ravages of cholera did not affect the officers or other Europeans in a like grade of life; and he says that "the small mortality amongst the officers of European regiments in Ceylon is very remarkable."† Indeed, the whole medical records teem with instances of the influences which the mind possesses in the production and removal of disease. It is possible that much may be done to enable our troops to exist in India and elsewhere, by attention to the necessity that exists for mental as well as physical exercise. Much might also be effected, were the differences of temperaments more studied, and a judicious selection made of those fitted for hot, and those for cold, climates.

Two questions were asked of Sir Ranald Martin, who is a great advocate for hill-stations and for other reforms in the army; his answers‡ are important:—

"1st. But is there no such thing as acclimatization?"

"A. No, I believe not.

"2nd. Physically, you do not think that acclimatization exists?"

"A. I think it does not."

These answers express the result of my own inquiries into this subject.

I have endeavoured to show from such facts as are at hand, that man cannot be *rapidly* displaced from one region and located in another without injury. This must be admitted, but it may be answered that it can be done *slowly*,—that if it cannot be done in one generation, it may be done in time. Now it is quite evident that "time is no agent" in this case; and unless there is some sign of acclimatization in one generation, there is no such process. A race may be living and flourishing in its own centre, but sometimes a very slight change into a new region will produce the most disastrous results. The Spaniards, for instance, cannot with impunity migrate into the new region on the opposite coast. In Egypt we see exemplified perhaps the most remarkable proof of what I have stated. From time immemorial Egypt has been ruled by foreign races, but not one has left any descendants. Mr. Warburton§ has briefly expressed himself on this point in these words:—"The Turk never or rarely inter-

* Ewart, p. 122.

† A note in Sir E. Tennant's *Ceylon*, p. 82.

‡ Minutes of Evidence on the Reorganization of the Indian Army, p. 172.

§ Loc. cit. p. 67.

marries with Egyptians, and it is a well-known fact that children born of other women in this country, rapidly degenerate or die ; there are few indigenous Turks in Egypt. Through the long reign of the Mamelukes there was not one instance, I believe, of a son succeeding to his father's power and possessions." These Mamelukes were generally adopted Circassian slaves, who adopted others in their turn ; and they had plenty of Circassian women imported to perpetuate their race, but with no better results than have met all other invaders. Of the English residents at Cairo the same writer observes :—"The English seem to succumb, for the most part, to the fatal influence of this voluptuous climate, and, with some admirable exceptions, do little credit to the proud character of their country."

The English also, when sent to any part of the Mediterranean, suffer far more than in England. It has been proposed to locate British troops at these stations for a time, before they proceed to India. The caution that a warm climate requires change of habits might do good, but we strongly suspect that if troops were located in the Mediterranean for a few years before proceeding to India, the mortality would be far higher when they arrived there. If also, with a view of colonizing India, we were to send a colony, for a generation or more, to dwell in the Mediterranean, we should get a degenerate race who would have few of the qualities of the British race. Wherever we go, we may apply the question in a similar manner. The distribution of mankind over the globe is the result of law, order, and harmony, and not of mere chance and accidental circumstances, as too many would have us believe. From the earliest dawn of history, races of men existed very much as they do now, and in the same locations. Jewish history, both monumental and written, tells us that the Jew has not changed for the last three thousand years, and the same is the case with all other races who have kept their blood pure. I would, therefore, say that it is as difficult to plant a race out of its own centre, as it is to extinguish any race without driving it from its natural centre. The Tasmanians and American Indians have both been extinguished by removal from their native soil ; and this is nearly the only process yet discovered of extinguishing any race of man. The object of this paper, however, is simply to suggest to ethnologists and geographers the necessity of a further investigation of the important question of acclimatization.

Mr. LAYARD said, the fault he should find with the paper was its want of generalization ; he thought the subject merited broader treatment. If the author meant to confine himself to the principle that a rapid transmission acted deleteriously, he should concur ; but that European and other races can be acclimatized he felt assured. The Finns, history teaches us,

migrated across Europe and settled in Finland, under a very different climate from that whence they had come. The Hungarians, who now occupied a large tract of country in Europe, had originally come from a distant part of Asia. The Bulgarians were a Tartar race, and were known to have come to the banks of the Danube, where they have become acclimatized, and now form an integral part of Turkey. The Jews, probably coming from the east of the Euphrates, settled in Syria, and had spread themselves thence all over the globe. Why Dr. Hunt should presume they were Phœnicians he did not know. The Jews had migrated from Palestine in known historic times. In parts of Turkey they had changed their outward characteristics, and, instead of dark eyes and hair, had light hair and blue eyes. In Roumelia, particularly, whenever you meet a man of Anglo-Saxon appearance, he will undoubtedly be a Jew. The Armenians have migrated into Russia. The Parsees in India have not in any way mingled with the natives of the country; and, amongst all the tribes there, no more intellectual race exists. In the wealthiest cities there are merchants and men of literature, and some even are establishing themselves in this country. Two or three hundred have already settled in Manchester and London. The Brahmins, too, are a foreign race, entirely different from the natives, who have not in any way degenerated, and who still stand prominently out in respect to their high mental development. What he learnt from the Hon. Secretary's paper was, that acclimatization could not be suddenly accomplished; but he contended that there was historical proof of races having migrated and become acclimatized, just as animals had been in our own country. We had scarcely a domestic animal which was not of an acclimatized breed.

Mr. MONCKTON MILNES thought the author had gone too far in his conclusions. It was difficult to see how, if the capability of acclimatization were denied, any of the great colonizations of the world had been effected, without involving a question, on which he did not wish to touch, of there being more than one race of mankind, and asserting that each ethnic race must have had its ethnic centre. It would be difficult on these principles to combine the known facts in the histories of nations with the great progress which our race has made. For we should expect thus to find the most highly developed races to be those which were indigenous to their ethnic regions, and had not intermixed. Now our historic knowledge proves the opposite. The English are a mixture; everything about us is composite; and yet we are not in any way inferior to any of those stems which have remained stationary, and have not been supplied with alien blood. Nor could he give up the belief that Englishmen could be acclimatized all over the world. He considered that an English race was growing up in the Antarctic realms as powerful as we were ourselves; and he should have been more pleased if the author had confined himself to bringing forward his great collection of valuable facts as indicating the effects produced in the process of acclimatization, rather than attempt to deny the existence of the capability altogether. One point there was on which he should be glad to be informed; it was as to the cause of the difference of voice which took place in the individuals of our race transplanted to the American continent, which was so remarkably predominant in the northern states of America, and which reproduces itself in those born in Australia, where the nasal twang was as much pronounced and as prevalent as in New York. The effects manifested in the process of acclimatization were highly deserving of study, and it was well we should be deterred from too high an estimate of the capabilities of Englishmen in this respect. He had never thought we should be able to acclimatize Europeans in India, but thought still some parts were capable of occupation. Spanish degeneration in South America might be explained by mere deterioration of blood. If the

Indians had been destroyed, the Spaniards would have remained. Negroes in the American states were not inferior to those of the tribes from which they had been abducted; on the contrary, the slaves of the Southern States were characterized by their superior intellectual and spiritual culture. And that was a case in which the race could not be said to be kept up by immigrant supplies. Dr. Hunt had not made out that acclimatization was impossible, although he thought he had proved that deterioration followed on rapid changes. But further than that he could not agree with him.

Sir ERSKINE PERRY said he did not quite agree in Dr. Hunt's Indian facts. Those who had spoken before, disputed his conclusions; he disputed his facts. Looking at his tables, those figures were made to prove a theory. They are said to be the annual ratios of deaths per thousand; but conclusions of this kind can only be depended on when founded on long periods, and you must take the average of many thousands, and not of a few individuals in a country. In the last column but one of the deaths, it was shewn that more soldiers die between 35-39 than between 40-80; of the Foot Guards of the first ages the mortality is 26·0; of the latter ages, only 9·0. These numbers, in General Tulloch's tables, were brought forward to prove it was far better to have the Queen's army in India than a local one. There was another statement which Dr. Hunt had relied on, that no English existed in India of the third generation. Whether this was a fact or not, nobody knows. But if it were so, it was traceable to other causes than a want of the powers of acclimatization. There was no temptation for the soldier to settle; the country was fully peopled, and manual labour was not required; and there were a great many other reasons than climate. In the upper classes, every one came home as soon as he had got his pension. But to the main point, that the European can adapt himself to new climatic conditions, he thought that two facts mentioned by Mr. Layard were conclusive. Of the Parsees we know the exact year of their settlement; we know that they brought their women with them; we know that they came from mountainous parts of Persia, and that they are now the most stalwart race in the country. Their blood they have kept, so to speak, as pure as a race-horse; their intermarriages are surrounded by strict rules; and the result is that, after twelve hundred years, they are the healthiest of any of the races with which they are associated. The case of the Portuguese was not similar. They did not take with them their women. Like the Normans in France, they landed as soldiers, and formed alliances with the native women; and now their descendants had acquired the colour and the language of the native people. But the Jews had been in Cochin on the Malabar coast longer than the Parsees had in India. They were as fair as Europeans; but their race was completely kept up amongst themselves. Black Jews there had been quoted; but these were not Jews at all by blood, but were merely converts, who marry among themselves and perpetuate their colour. He thought such facts were very hard for Dr. Hunt to get over; but he was entirely in concurrence with him in deprecating the folly of the attempt to colonize India, but from the different reason that there was no want of labour there; and everything which tended to discourage the movement, even if not substantial in principle, was to be approved.

Dr. HODGKIN considered the paper was full of interesting and practical suggestions. The subject was one of great moment, which concerned both individuals and the country at large. It was awful to think of the way in which human life has been sacrificed in the army, not merely in fighting and in the dispatch of troops, but by the manner of the soldier's life in different climates. Of late great improvements had been effected by the

efforts of General Tulloch. Dr. Edwards, in his work on *The Influence of Physical Agents*, shows a sort of acclimatization which is constantly going on in each individual. As summer advances, a change in the system is produced, which influences the chemical changes of the inspired air. Less oxygen is converted into carbonic acid, and less heat is produced. The return of cold brings back the larger consumption of oxygen. The change is gradual, and is the effect of acclimatization. It is demonstrable by minute and accurate chemical analysis, as completely as the presence of poison in the stomach or in the animal tissues by the medical jurist. If the effect of a comparatively few days could be thus estimated, we might judge of the influence of longer periods, and form some idea of the advantage to be taken of it, as well as of the measures to be employed to counteract it when needful. That is, we should find out some method of *conditioning*, which, after all, is one kind of acclimatization. He considered there was another kind of acclimatization in the changes brought about in generations, which, provided the health of individuals were maintained by successful methods, gradually inured the race to the climate to which it might be transferred. But if the migrations were rapid, as of British troops to India, there must be degeneration in the parents, and, if in the parents, the degeneration must be still greater in the offspring. This knowledge was important in sending out troops, and to the Government in promoting colonization.

SIR ALEXANDER TULLOCH would not have ventured to have addressed the meeting, but that some allusion had been made to his tables. These remarks had been made in mistake, and he rose to explain. Those tables had not been prepared with regard to any recent changes in India; but referred to the state of the European troops under the East India Company, which did not number more than five or ten thousand. The basis for such statistics had now been greatly extended. The reason why there were so few deaths, at ages beyond forty, was that, as a general rule, they had but few or no soldiers over that age, as at that period they were entitled to their discharge. The men enlisted at from eighteen to twenty, and the soldiers remaining in service after forty do not exceed three per cent. The tables had no reference whatever to any changes in respect to the East India Company, which might have led to a bias.

Mr. H. SANDWICH, C.B., agreed on the whole with Dr. Hunt's views and facts, especially with what he had advanced concerning the Anglo-Saxon race. But it was not an unusual thing to see a hobby ridden a little too hard; and, in this case, he thought the doctor had gone too far when he doubted the colonization by *any* people of a distant country. Before noticing generally Dr. Hunt's observations, he must call in question two of his examples. The difference noticed between the births and deaths of Indians in Mauritius was simply due to the disproportion of males and females. At one time there were not more than five or six per cent. of the latter; the proportion now is better, probably sixty per cent. Again, the great mortality of the Negroes in 1844 could scarcely be pressed into the service of Dr. Hunt's theory, since it was the effect of an epidemic of cholera, which smote all races alike. These Negroes, however, had died away remarkably, not on account of an unsuitable climate, for most of them had merely been brought from the opposite coast, but from the sudden transition from slavery to liberty. They were like London horses turned into the wilderness to shift for themselves; and, brought into contact with European vices, they gave themselves up to dram-drinking, and perished by hundreds. But with regard to Dr. Hunt's opinions as to the coloniza-

tion of tropical countries by Anglo-Saxons, he (Mr. S.) agreed entirely with the views laid down. He considered these no longer theories, but well-established facts. A great experiment had been tried in India; thousands of our race went out there, and had been going there for more than a hundred years, and yet there was no third generation. All English parents were obliged to send their children to be reared in Europe, with few exceptions; and these latter perished, or grew up faded and miserable creatures. Sir E. Perry had stated that there was no demand for European labour, and *therefore* no Europeans of that class emigrated to India. But in the West Indies there had been for forty years past the utmost demand for labour, and yet who ever heard of European labourers emigrating there? No; the Anglo-Saxon race is totally unsuited to a tropical climate, and in all our tropical possessions we see them giving way before the dark races. This intolerance of hot climates is not merely English. He had observed that in Mauritius the original French settlers are gradually disappearing before the dark races. In the early part of this century the Mamelukes of Egypt, a ruling race, were supplied from Circassia exactly as the ruling English are supplied to India from England; but these strangers could never breed there; their offspring perished; and, after some centuries of occupation, there is now not a trace of the Mameluke race in Egypt. This subject, so ably handled by Dr. Hunt, is of the last importance for the consideration of statesmen. The moral seems to be, that we should avoid by all means taking possession of tropical countries, which at a vast expense of life we may govern, but which we can never colonize, and which remain on our hand as subject provinces governed by an alien race.

Dr. WARD said the branch of the subject on which he wished to speak, was the medical—in this respect there were two topics of importance. 1st. The liability of races in emigrating to become subject to diseases. 2nd. The relative power of races to resist diseases. Dr. Hunt was confirmed by Dr. Nott in the assertion that Negroes enjoy an immunity from yellow fever. The evidence given to himself by friends, showed that such was not the case. The whole question in respect to acclimatization resolves itself into this, that negroes suffer by removal like Europeans. All races do so, more or less, and the deductions of his own experience would be, that races could be acclimatized only within certain limits; some being much better adapted for acclimatization than others.

Dr. HUNT, in reply, said it would be impossible for him, at that time of the night, to attempt to give anything like a reply to the important objections which had been raised to his paper by the interesting discussion which had taken place. The most serious objection raised was, that history was against his conclusions. It would lead him into too large a field to attempt at this time to reply to the objections which had been so powerfully urged by Mr. Layard; but, with the permission of the Society, he would endeavour hereafter to bring under the notice of Fellows the lesson which we were taught by the history of colonization; and he then thought he should be able to prove that the objections which had been raised to the conclusions of his paper gained a very considerable amount of support from all reliable history.

A vote of thanks having been passed to Dr. Hunt, the meeting adjourned.